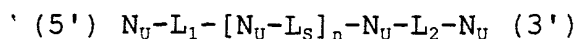


WHAT IS CLAIMED IS:

1. A compound comprising a plurality of covalently-bound nucleosides, said compound having the formula:



5 wherein:

each N_U is, independently, a nucleoside that includes a ribose or deoxyribose sugar portion and a base portion;

L_S is a racemic phosphorothioate internucleoside linkage;

10 n is 1-200; and

L_1 and L_2 are independently selected such that:

L_1 is a Sp phosphorothioate internucleoside linkage, L_2 is a racemic phosphorothioate internucleoside linkage, and said compound has greater
15 than about 60% stereoisomeric purity; or

L_1 and L_2 both are Sp phosphorothioate internucleoside linkages and said compound has greater than about 60% stereoisomeric purity; or

L_1 is a Rp phosphorothioate internucleoside linkage, L_2 is a racemic phosphorothioate internucleoside linkage, and said compound has greater
20 than about 60% stereoisomeric purity; or

L_1 and L_2 both are Rp phosphorothioate internucleoside linkages and said compound has greater
25 than about 60% stereoisomeric purity; or

L_1 and L_2 , independently, have the formula CH_2-O-NR or CH_2-NR-O wherein R is H , alkyl having 1 to about 10 carbon atoms, alkenyl having 2 to about 10 carbon atoms, alkynyl having 2 to about 10 carbon atoms; alkaryl
30 having 7 to about 14 carbon atoms, aralkyl having 7 to about 14 carbon atoms.

2. The compound of claim 1 wherein L_1 is a Sp phosphorothioate internucleoside linkage and L_2 is a racemic phosphorothioate internucleoside linkage.

3. The compound of claim 1 wherein L_1 and L_2 both are
5 Sp phosphorothioate internucleoside linkages.

4. The compound of claim 1 wherein L_1 is a Rp phosphorothioate internucleoside linkage and L_2 is a racemic phosphorothioate internucleoside linkage.

5. The compound of claim 1 wherein L_1 and L_2 both are
10 Rp phosphorothioate internucleoside linkages.

6. The compound of claim 1 wherein L_1 or L_2 is CH_2-O-NR .

7. The compound of claim 1 wherein L_1 or L_2 is CH_2-NR-O .

8. The compound of claim 1 wherein L_1 and L_2
15 are both CH_2-O-NR .

9. The compound of claim 1 wherein L_1 and L_2
are both CH_2-NR-O .

10. The compound of claim 1 wherein R is alkyl.

11. The compound of claim 1 wherein R is methyl.
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12. The compound of claim 1 wherein at least one of said nucleosides includes a ribose sugar portion.

13. The compound of claim 1 wherein at least one of said nucleosides includes a deoxyribose sugar portion

14. The compound of claim 1 wherein n is about 5 to about 50.

5 15. The compound of claim 1 wherein n is about 8 to about 30.

16. A composition comprising a compound of claim 1 and an acceptable carrier.

10 17. A method of modulating the production or activity of a protein in an organism, comprising contacting said organism with a compound of claim 1.

18. A method of treating an organism having a disease characterized by the undesired production of a protein, contacting said organism with a compound of claim 1.

15 19. A method of assaying a nucleic acid, comprising contacting a solution suspected to contain said nucleic acid with a compound of claim 1.

Patented Dec 9, 1968